STRATIFY

Business Analytics Bootcamp – 2025

Project - Inventory Rewired

1 Objective of the Project

Simulation and optimization of inventory and replenishment decisions across a fictional retail supply chain network, with the objective of reducing out-of-stock events and excess inventory holding costs by 10 percent over a 3-month simulated horizon.

2 Project Background

The fictional company Retail Craft Pvt. Ltd. operates 3 urban stores in India. They stock a portfolio of 10 SKUs ranging from fast-moving grocery items to slow-moving niche goods. The company faces high stock out rates in fast movers and overstocking in slower SKUs, resulting in lost sales and high working capital.
The ERP system has historical data available in silos: sales, inventory levels, purchase orders, and supplier lead times. Participants are expected to consolidate this data, analyze demand variability, identify patterns in replenishment behavior, and redesign the inventory control framework.

3 Deliverables / Outputs

- Cleaned and structured database of 3-month historical sales and stock movement across the 3 stores.
- Classification of SKUs using Pareto analysis for prioritization.
- Replenishment model proposal using one or more techniques(EOQ, ROP, periodic review, demand forecasting).
- Safety stock and reorder level computation per SKU-category pair.
- A 3-week replenishment simulation using your model vs. actual data (comparison of KPIs).

- Final report with model performance, assumptions, dashboards (Excel/Python), and cost benefit summary.
- 10-minute executive summary presentation to leadership panel

4 Measures of Success

- Inventory-related KPIs: Fill rate, Inventory turnover, Clarity, realism, and robustness of the recommended model.
- Strategic insight demonstrated in the final presentation.
- Quality and depth of data handling and visualization.

5 Simulation Timeline & Format

- The bootcamp is for reference and you may use it to learn topics relevant to the project.
- Mid-term report submission - 15 August.
- End-term report and presentation submission - 22 August.
- The mid-review and final showcase will simulate executive boardroom evaluations.

6 Data Provided (Simulated)

- Sales data: Daily POS data per store per SKU for 90 days.
- Inventory: Opening/closing stock per SKU at stores and warehouse.
- Master data: SKU attributes (category, lead time, shelf life, unit cost).
- Purchase orders: PO placement logs and delivery timelines.
- Supplier data: Service levels and historical delay frequency.

7 Preparatory Knowledge Recommended

- Supply Chain Fundamentals
- Inventory models, lead time dynamics, demand variability.
- Statistical Demand Forecasting – Moving average, exponential smoothing, or regression based algorithms.
- Tools – Excel (pivot, solver, VBA), Python (pandas, matplotlib), or R.
- KPI design and dash boarding for supply chain analytics.